

## **A B S T R A C T**

The present invention is a composition for forming seals. The composition includes a base material and a hydrogel. The base materials is preferably an elastomer or a thermoplastic. Seals formed with the composition are particularly suited for use in a wellbore environment. The inclusion of hydrogel in the seals allows the seals to be manipulated or altered through certain environmental factors. For instance, temperature, oil/water ratio, pH and the electronic field may all be used to alter the characteristics of the hydrogel. In this way, the seal may be caused to swell in response to a specific stimulus, thereby preventing or sealing a leak without requiring additional work or input from the operator.